

CLAIMS

What is claimed is:

1. A fuel system comprising:
an electrochemical conversion system in contact with a liquid fuel containing a dissolved oxygen, said electrochemical conversion system operable to convert the dissolved oxygen to water.
2. The fuel system as recited in claim 1, wherein said electrochemical conversion system comprises a first electrode in contact with the liquid fuel.
3. The fuel system as recited in claim 2, wherein said first electrode is coated with a barrier material.
4. The fuel system as recited in claim 2, wherein said first electrode comprises a surface texture which generates laminar flow boundary layer mixing.
5. The fuel system as recited in claim 2, wherein said first electrode is porous and formed into conduits through which fuel passes to increase the contact area between fuel and said first electrode.
6. The fuel system as recited in claim 1 further comprising a power source to power said electrochemical conversion system.
7. The fuel system as recited in claim 1 further comprising a water collector in communication with said electrochemical conversion system.

8. A method of removing dissolved oxygen from within a fuel system comprising the steps of:

- (1) locating an electrochemical conversion system in contact with a liquid fuel containing a dissolved oxygen;
- (2) electrochemically converting the dissolved oxygen to water; and
- (3) separating the water from the liquid fuel.

9. A method as recited in claim 8, wherein said step (1) further comprises the steps of:

locating a first electrode within the liquid fuel.

10. A method as recited in claim 9, further comprising the step of:

adding an oxidizable agent to the liquid fuel in concentrations of about 0 to 100 ppm

11. A method as recited in claim 8, further comprising the step of:
powering the electrochemical conversion system to provide at least a 22 mV + overpotential.

12. A method as recited in claim 11, wherein said step (2) further comprises the steps of:

reducing the dissolved oxygen concentration within the fuel to below 2 ppm.

13. A method as recited in claim 8, wherein said step (1) further comprises the steps of:

locating a first electrode within a communication path of the liquid fuel.

14. A method as recited in claim 8, wherein said step (1) further comprises the steps of:

locating a first electrode within a communication path of the liquid fuel; and generating laminar flow boundary layer mixing with a surface geometry of the first electrode.

15. A method as recited in claim 8, wherein said step (1) further comprises the step of:

forming a concentration cell with the electrochemical conversion system.

16. A method of claim 15 further comprising the step of:

venting gas generated at the second electrode.

17. A method of claim 10 wherein said step (1) further comprises the step of: oxidizing the oxidizable agent on the second electrode.

18. A method as recited in claim 9, further comprising the step of: adding formaldehyde.

19. A method as recited in claim 9, further comprising the step of: adding an alcohol.

20. A method as recited in claim 9, further comprising the step of: adding ethylene glycol.